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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,066

05/24/2007

Michael Mason

9706

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22922

7590

04/03/2009

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EXAMINER

NGUYEN, PHILLIP

ART UNIT

PAPER NUMBER

2828

NOTIFICATION DATE

DELIVERY MODE

04/03/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPAdmin@reinhardtllaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,066	<b>Applicant(s)</b> MASON ET AL.	
	<b>Examiner</b> PHILLIP NGUYEN	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10,23-39 and 43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10,23-39 and 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/21/06, 8/9/09</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-10, 23, 26-39, and 43, in the reply filed on 3/16/2009 is acknowledged.

Claim 23 was unintentionally restricted in other group and thus will be examined in this Office Action as being considered in the Group I.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the predetermined beam quality" in line 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claims 28, 34 and 33 recite the limitation "said laser" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 30 recites the limitation "said laser gain medium ends" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

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Claim 35 recites the limitation "the amplifier" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-10, 23, 31-35, and 39 are to depend on claims 1 and 30. Since claims 1 and 30 are not clear as discussed above, all of the dependent claims become unclear and rejected as well.

### ***Claim Rejections - 35 USC § 102***

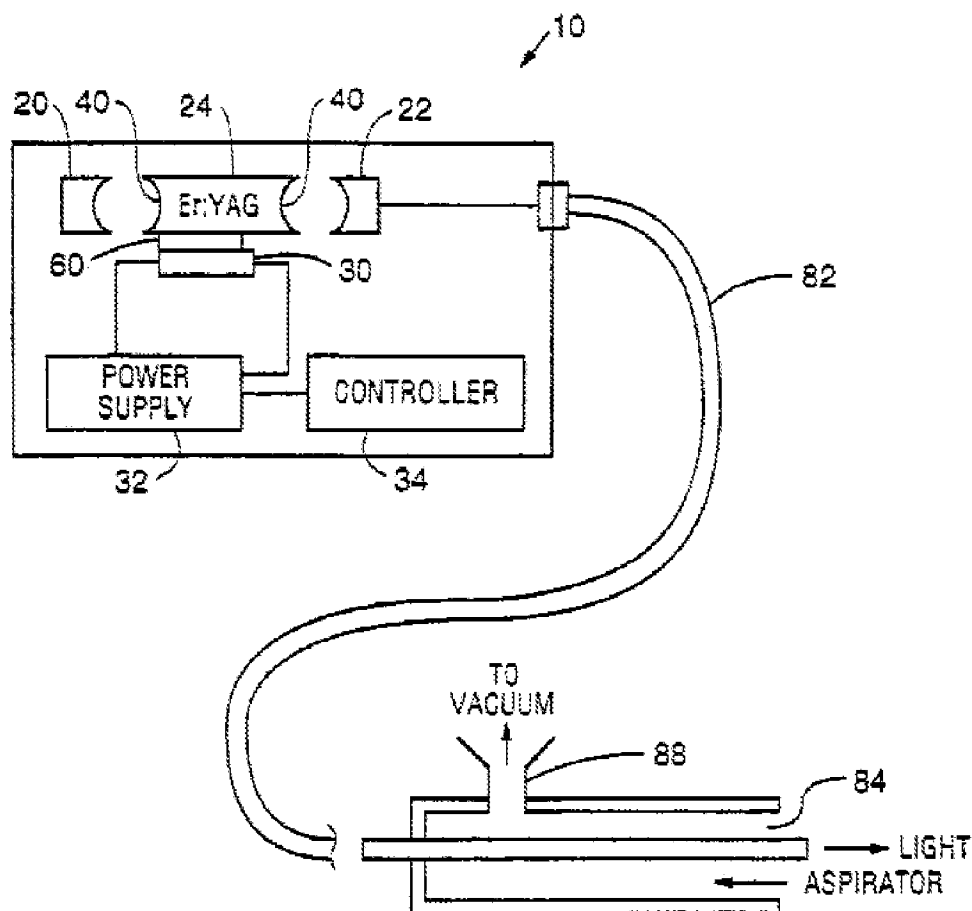
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4-5, 9, 23 are rejected under 35 U.S.C. 102(b) as being anticipated by

Mitchell et al. (US 6395000).

**FIG. 1**

With respect to claim 1, Mitchell discloses in Fig. 1 a solid state laser gain medium 24 having first and second ends 40 along a laser optical axis in which at least one end is profiled to provide a level of thermal lensing at a predetermined operating power, in which the

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predetermined beam quality is centered substantially on a maximum at the predetermined operating pump power (col. 4, lines 49-58).

With respect to claim 2, Fig. 1 illustrates both ends of the solid-state laser gain medium are profiled.

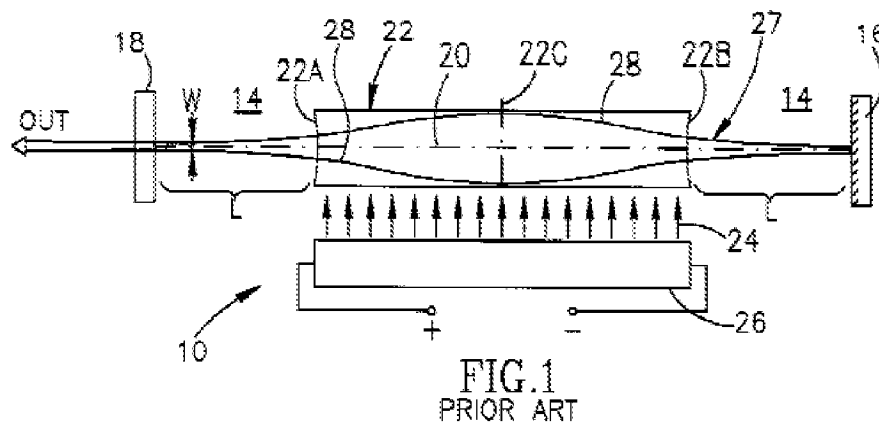
With respect to claim 4, Fig. 1 further illustrates a laser cavity (defined by mirrors 20 and 22) including a solid state laser gain medium as defined in claim 1.

With respect to claim 5, Mitchell discloses the cavity end reflectors 20 and 22 as concave mirrors but further teaches the mirrors could be flat as well (col. 5, lines 60-62).

With respect to claims 9 and 23, the claims recite the intended uses of the device as defined in claim 1 which do not have any patentable weight and therefore anticipated by Mitchell as well.

4. Claims 1-5, 10, 36 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Angeley (US 6282223).

Angeley discloses the claimed invention as follows:



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With respect to claims 1, 36, 38, Angeley discloses in Fig. 1 a solid state laser gain medium 22 having first and second ends 22A and 22B along a laser optical axis 20 in which at least one end is profiled to provide a level of thermal lensing at a predetermined operating power, in which the predetermined beam quality is centered substantially on a maximum at the predetermined operating pump power (col. 3, lines 47-61).

With respect to claim 2, Fig. 1 clearly illustrates both ends 22A-22B of the solid-state laser gain medium are profiled.

With respect to claim 3, Angeley teaches Er:YAG is a material of the solid state laser gain medium but also discloses Nd:YAG could be used (col. 7, lines 10-19).

With respect to claims 4, 9, and 23 recite intended uses of the laser medium as rejected in claim 1. The intended uses provide no patentable weight. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

With respect to claim 5, Angeley discloses Fig. 1 (prior art) which shows both cavity end reflectors 16 and 18 are flat.

With respect to claim 10, Angeley discloses that the pump source 24 is flash lamp but those skilled in the art will also recognize without further illustration that pump-light 24 may be provided by one or more diode-laser arrays. According to the Fig. 1, laser medium 22 is pumped on the side.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8, 26-28, 30-35, 39 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Angeley (US 6282223) in view of Smart (US 20020093997).

With respect to claims 6-7, Angeley discloses the claimed invention except for a Q-switch having a first and second acousto-optic cells and respective first and second non-parallel polarization orientations. Smart discloses a laser 10 comprising a gain medium 6 and a Q-switch 8 formed of acousto-optic modulator (paragraph 0060). It would have been obvious to one skill in the art at the time the invention was made to provide a Q-switch as taught by Smart to Angeley in order to produce short pulsed output. Using one reflective end of a Q-switch as a cavity end reflector only involves routine skill in the art to make the laser structure more compact.

With respect to claim 8, although Angeley does not disclose frequency converter and a frequency selective reflector between the solid-state gain medium and the frequency converter, it would have been obvious to one skill in the art at the time the invention was made to provide a frequency converter such as nonlinear crystal to convert the output to shorter wavelength (harmonics) for other uses. A frequency selective reflector could be easily realized by any type of grating or dichroic mirror or anti-reflective coating/film. See Ishizu (US 20050276300), Liu et al. (US 20050215078), or any green laser generation apparatus.



With respect to claim 26, the claim fails to define a laser cavity. Examiner presumes that the pump source 24 (which is laser diode array) includes laser cavity. Angeley further discloses an amplifying module external to said laser cavity, comprising a gain medium 22 having first and second ends 22A and 22B, whereby at least one of said first or second ends is profiled so as to directly coupled light from said laser cavity into said amplifying module. However, the pump source 24 pumps on the side of the gain medium 22 so that the amplifying module do not share a common axis of emission with said laser cavity.

Smart discloses in Fig. 1 a laser apparatus including a laser cavity (from laser diode 4) and an amplifying module (including gain medium 6). Both share a common axis of emission.

It would have been obvious to one skill in the art at the time the invention was made to provide a pump source at the end of the amplifying module so that both having a common axis as taught by Smart to Angeley because the end pump is more efficient and produces better transverse mode (see paragraph 0006 of US 20080065057).

With respect to claims 27-28, Fig. 1 illustrates one or both first and second ends 22A and 22B to form a lens having a predetermined focal length (depending on the curvature of the profiled portion).

With respect to claims 30-35, since the claims are confusing due to lack of antecedent basis, it's reasonable to interpret there is one gain medium from the amplifying module. This gain medium is disclosed by Angeley as shown above with all claimed features.

With respect to claim 39, the claim recites a method of designing the laser amplifier as defined in claim 34 which is considered inherent product by process.

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With respect to claim 43, the claim recites an intended use which does not provide any patentable weight and therefore being considered anticipated by Angeley as well.

***Communication Information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ARMANDO RODRIGUEZ/  
Primary Examiner, Art Unit 2828

/Phillip Nguyen/

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